

**EXPOSURE INFORMATION REPORT**

**US ECOLOGY NEVADA**

**March 2010**

**SECTION 2**  
**EXPOSURE INFORMATION REPORT**  
**TABLE OF CONTENTS**

2.1.0 Facility Setting	.....	1
2.2.0 Groundwater Pathway	.....	3
2.3.0 Surface Water Pathway	.....	4
2.4.0 Air Pathway	.....	4
2.5.0 Subsurface Gas Pathway	.....	5
2.6.0 Release to the Soil	.....	6
2.7.0 Transportation	.....	6

## SECTION 2

### EXPOSURE INFORMATION REPORT

This report complies with the requirements of 40 CFR §270.10(j), and discusses the potential for public exposure to hazardous waste or constituents through reasonably foreseeable potential releases from both normal operations and accidents at the facility or from transportation to and from the facility.

#### 2.1.0 SITE SETTING

The USEN Facility is located in Nye County, Nevada, a rural area located approximately 125 miles northwest of Las Vegas and 11 miles south of Beatty, Nevada. Beatty is an unincorporated community with approximately 1,200 residents. The Facility is owned by the State of Nevada and is leased by USEN, which operates it. The entire property leased by USEN covers approximately 80 acres, which is surrounded by a placarded fence, which prohibits access.

Waste disposal operations began at the facility in the 1960's after the site was selected because of its isolated desert location, excellent geologic environment and well-protected groundwater resources.

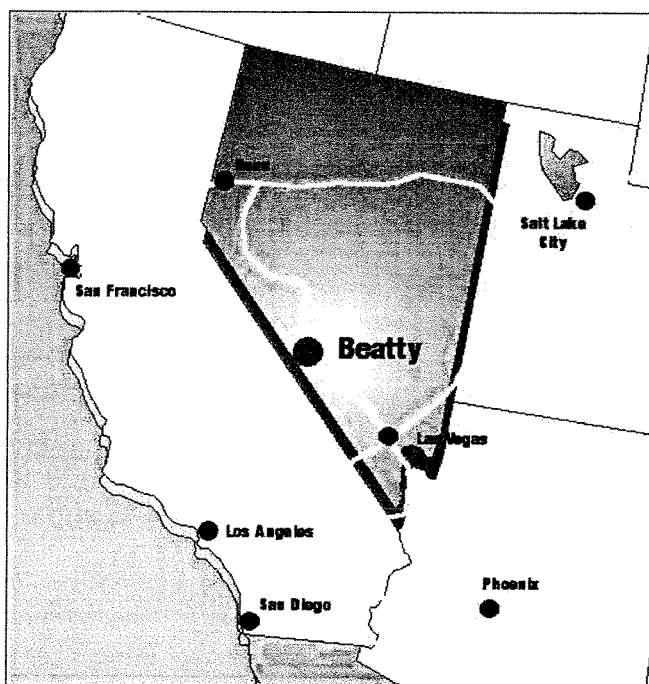
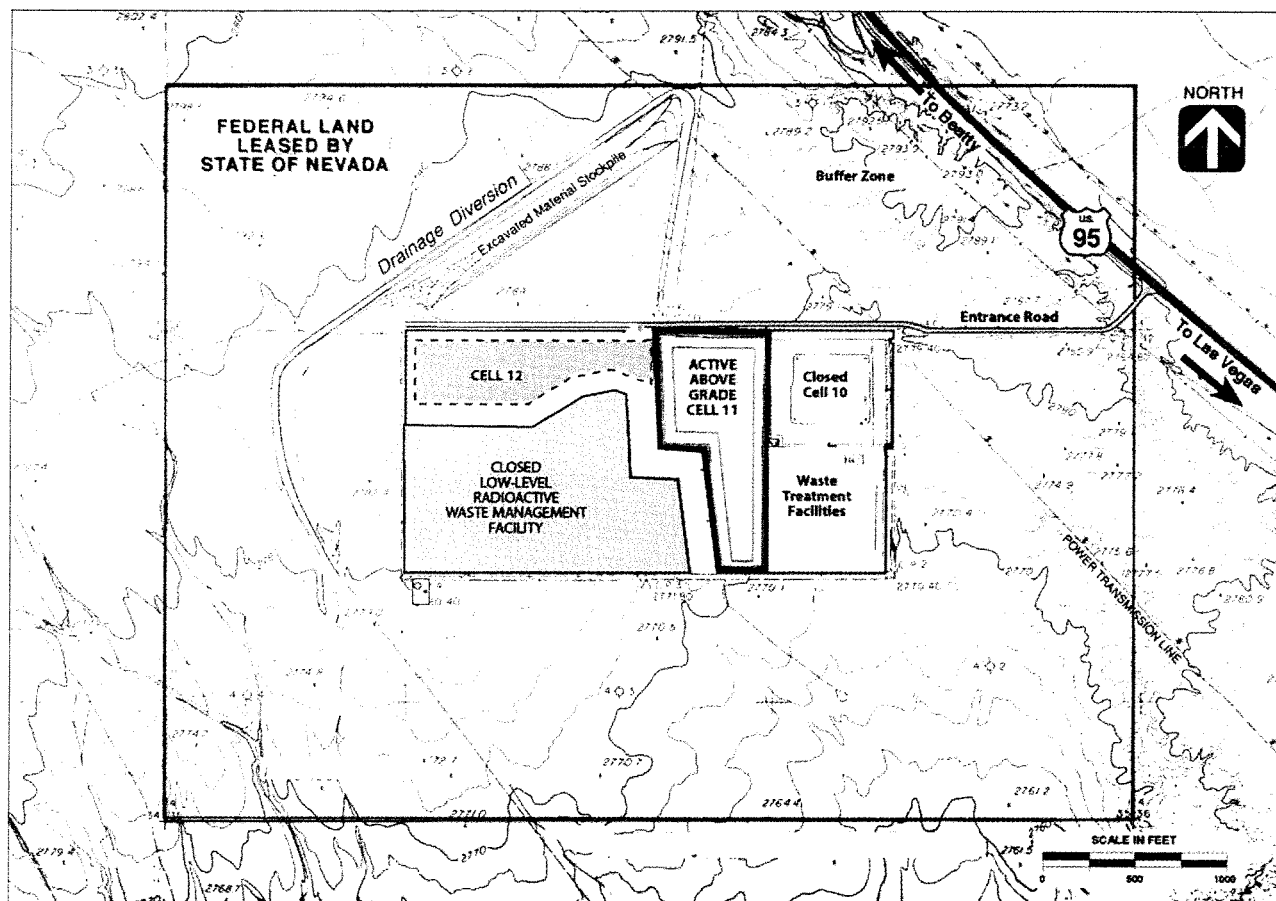


Figure 2.0  
Facility Location Map

All adjacent property within several miles of the Facility is federally-owned and administered by the Bureau of Land Management (BLM) as rangeland. BLM leases the sections bordering the Facility boundaries to the State of Nevada as a buffer zone (400 acres in extent; approximately 1,320 feet from the Facility fence line).

Neither the buffer zone nor the facilities are located on or adjacent to tribal lands. The nearest private residence is 11 miles to the north.

Facility access is provided by a sole entrance road which leads from U.S. Highway 95 to the east of the site. Employees and customers use this road exclusively. Employees park to the north of the facility in the buffer zone, on graveled surfaces. Interior haul roads provide access for facility operations. Vehicles which have operated in the active portions of the landfill are not allowed to leave the property until they pass through the wash station. Wash water is evaporated on site or used for dust suppression within the active landfill area.



**Figure 2.1**  
**Facility Layout**  
**Showing 80 Acre State of Nevada Property and Leased Buffer Zone**

The Amargosa Desert is in the northern Mojave Desert separated from Death Valley by the Amargosa Range, and is one of the driest regions in the United States. Amargosa Desert average annual rainfall is approximately four inches. Annual precipitation ranged from 0.08 inches during 2002 to approximately 9 inches during 1983. About 70% of the precipitation is associated with frontal systems during October through April. Snow, however, is rare. Summer rainfall occurs predominantly during localized, short-duration, convective storms. Monthly mean air temperatures range from 37.4°F during December to 91.4°F

during July. Daytime high temperatures in the summer are commonly above 100°F. Evapotranspiration approaches 78 inches per year.

The potential for public exposure is minimized by the Facility's remote location. No one lives within 11 miles of the site and the nearest public water source is 11 miles away. Recreational use of the BLM lands surrounding the site is a rare event. There are no surface waters in the vicinity of the site and the desert environment is generally hostile to life. The dry desert environment facilitates secure disposal, while minimizing risks from waterborne movement of contaminants.

## **2.2.0 GROUNDWATER PATHWAY**

The active landfill cells are provided with a double liner and leachate collection system to prevent migration of waste or waste constituents to the groundwater, as required by the Hazardous and Solid Waste Amendments of 1984. Landfill design is described in the Landfill Report.

The groundwater and geological conditions at the site are extensively discussed in the Groundwater Monitoring Plan. The US Ecology Nevada (USEN) hazardous waste management facility is located in a remote area of the Amargosa Desert, in western Nevada. The location of the facility combines characteristics that are optimal for waste disposal and that minimize any potential for public exposure resulting from groundwater contamination.

The facility is located in an area underlain by two discrete hydro geological units: an upper saturated zone consisting of approximately 150 feet of partially cemented to well-indurated clays, silts, and sand; and a confined gravel aquifer beneath the fine-grained deposits at a depth of 380 feet or more. The depth to the saturated zone ranges from 285 to 360 feet. The upper saturated zone is characterized by low transmissivity values, and therefore low ground water flow velocities (ranging from less than 0.1 to a maximum of about 3 ft/yr).

Due to the arid climate of the desert, the moisture-deficient nature of the soil, and the thickness of the unsaturated zone, no significant recharge of groundwater occurs, even during the infrequent, but intense precipitation events. Most rainfall at the facility infiltrates the ground surface, but because of the dry conditions of the soil, moisture will return to the atmosphere as evaporation or transpiration before any deep migration takes place. As discussed in the Groundwater Monitoring Plan, a study conducted at the site suggested that percolation of moisture at depths greater than two (2) meters have occurred only three (3) times in a period of 14 years.

The likelihood for groundwater contamination from the disposal cells is minimized by the final cover placed over the disposal cells upon closure. Cell capping reduces the potential for rainwater to reach the disposal zone and generate leachate that could migrate to groundwater.

In the unlikely event of any contaminant reaching the groundwater, the facility groundwater detection system will detect a release from the land disposal units (see the Groundwater Monitoring Plan for details).

Because of the low groundwater velocities in the upper saturated zone, it is likely that detection and remediation can take place before the release impacts a large area. The potential for public exposure to contaminated groundwater is low.

### **2.3.0 SURFACE WATER PATHWAY**

The USEN Facility is located on an alluvial fan within the Amargosa Desert, which is not in a 100-year flood plain. Rainfall is very sparse in this desert region and evaporation rates are high. The extremely low rainfall and high evaporation rate result in the total absence of any local surface water source. There are no continuous flowing surface water sources within a radius of at least eight (8) miles from the facility.

The facility is subject to concentrated storm-water flows resulting from sporadic rainfall events. Run-on from these intermittent storms is diverted from the facility by elevated earthen diversion structures and the Amargosa River channel. Landfill design provides for containment structures in the active cell and engineered covers in inactive cells to control the migration of contaminated run-off during rainfall events. The Landfill Report describes the run-on and run-off controls in more detail.

The facility does not dispose of free liquids in the cell, thus eliminating the potential for rapid spread of a liquid material off-site before clean-up activities can be initiated.

The potential for exposure to contaminated surface water is low.

### **2.4.0 AIR PATHWAY**

The primary source of air emissions at the site is dust generated during disposal of fine particulate bulk waste loads, earth moving operations and vehicular traffic. Potential emissions may also result from the operation of the Low-Level Thermal Desorption Units (LTTD), the Container Management Building, and/or from the inadvertent commingling of incompatible waste. The LTTD system and Container Management Building are equipped with emission control equipment. The potential of human exposure resulting from air releases is minimized by the facility's remote location, which makes it very unlikely that concentrated emissions could ever reach a population source. Besides Beatty (11 miles away), the closest town is Lathrop Wells, located approximately 20 miles southeast of the facility. There are no residences located near the facility due to the desert conditions. Any air release that may leave the facility would be well dispersed before reaching a population concentration. Travelers on Highway 95 pass within one mile of the facility, however they would only be potentially exposed for a few seconds when passing the site.

The controlled operation of the USEN Facility minimizes air releases. Dust generation as a result of earth-moving operations and vehicular traffic is controlled by use of dust suppression. The potential for wind dispersal of particulates and odor is minimized through evaluation of potential waste streams to be accepted into the facility. Waste descriptions and samples are evaluated during the waste stream approval process to characterize the potential for particulate emissions, odor or dust generation. Waste streams, which pose a

potential for emissions, may be rejected, or managed on-site using special precaution such as water spray during off-loading or special packaging or handling. Also, daily cover practices minimize emission from disposed waste.

After unloading, all trucks are inspected and, if necessary, decontaminated at the facility wash pad before being allowed to exit the facility. This procedure reduces the potential for dispersion of waste materials over other portions of the facility and the surrounding highways.

The waste characterization and handling procedures also address the potential for inadvertent commingling of incompatible waste. Prior to acceptance, all waste streams are inspected in accordance with procedures outlined in the Waste Analysis Plan (WAP) and any waste which cannot meet the requirements outlined in 40 CFR §§264.312 and 264.313 will not be accepted at the facility. USEN's waste characterization system provides the information necessary to take precautions in handling these materials to prevent releases, fires or explosions.

Because of the facility's location, operation, and waste characterization and handling techniques, the potential for human exposure from air releases at the USEN Facility is low.

#### **2.5.0 SUBSURFACE GAS PATHWAY**

The facility's cell characteristics, the type of waste accepted for disposal, as well as the facility's cell location and open area operation, minimize the potential for significant quantities of subsurface gas to accumulate.

No municipal waste or large quantities of biodegradable materials have never been disposed. In addition, landfill cells are located at sufficient distance from buildings and other structures that could possibly trap a significant amount of a subsurface gas release. Facility operations are performed in an open area, which provides adequate dilution and dispersion of any subsurface gas release.

A study conducted by Dames and Moore in 1978 has confirmed that the likelihood for generation of gas is minimized by the dry desert conditions. The study, *Trench Gas Study at the Beatty Low-Level Radioactive Waste Disposal Site*, concluded the following:

*"The relatively small quantities of carbon dioxide and methane in the trench gas suggest that relatively limited organic decomposition is taking place. This limited decomposition is probably a result of the extremely small quantities of water which exist in the solid waste cell."*

A RCRA Facility Assessment concluded that organic gasses migrating from disposal cells have caused limited contamination of facility groundwater. As discussed above, the potential for human exposure to contaminated groundwater is low.

The overall potential for human exposure from subsurface gas release at the USEN Facility is low.

## **2.6.0 RELEASE TO THE SOIL**

The potential for human exposure from soil releases at the USEN Facility is low. The facility design and operational procedures minimize the potential for soil contamination and, in the unlikely event of such contamination, control the factors that could promote its migration.

The most likely sources of soil contamination would be spillage while unloading waste and transporting it within the landfill. To minimize these sources, speed limits are imposed on all vehicles transporting waste within the facility boundaries, and USEN personnel ensure precautions are observed. To eliminate the potential for spillage while unloading waste, all waste shipments are unloaded within the landfill or over containment structures. In addition, employees are trained to detect and report spill events.

In the event of any hazardous material release, USEN is equipped to handle on-site response operations. Facility personnel are trained in response techniques for containment, monitoring, and ultimate clean up of a spill or release. Further information on these procedures is provided in the Contingency Plan.

Perimeter security prevents exposure of contaminated soil to humans or livestock. The principal component of this security is a chain-link fence topped with three (3) strains of barbed wire. The fence is also designed to prevent access from crawling animals. The fence perimeter is appropriately posted with signs, which warn intruders against unrestricted entry. Exposure outside the fence is minimized by the remote location of the facility.

Another source of soil release is the dispersion of fine particulate waste by the wind. As discussed in Section 3.0, waste characterization and handling procedures minimize the wind dispersal of these materials.

## **2.7.0 TRANSPORTATION**

All transportation to and from the facility occurs on an access road leading from Highway 95. Any accidents or spills along this road will be immediately apparent and rapidly remediated. There is no public use of the access road.

The transportation methods used on public highways are designed to minimize releases primarily through containment. Most wastes shipped to the facility are solid or semi-solid materials, and are either containerized (e.g.; drums or roll-off boxes), bagged (e.g.; asbestos), or placed within a plastic liner and tarped. Smaller amounts of aqueous materials are brought to the facility and this reduces the potential for emergency situations involving liquids. In the unforeseen event of a release, USEN has the capabilities to address the release through implementation of the Contingency Plan. Off-site waste shipments are primarily containerized wastes.

The facility is equipped to handle response and clean-up operations for on-site transport releases. Facility personnel are trained in response procedures and techniques to contain, monitor and clean-up releases resulting from transport accidents or leaks. Assessment and remedial response to a release would be

conducted by trained and equipped personnel. For a breakdown of these procedures, personnel training and available equipment, refer to the Contingency Plan and the Training Plan.

The potential for human exposure from transportation-related releases on-site is low due to the facility's location, response capabilities and the absence of surface water pathways. Potential for off-site transportation releases is limited by the types and amounts of waste transported.